Partial Translation of Reference 1

Column 12, Line 24 to Column 16 Line 3

[0079]   (Second Embodiment)

The second embodiment is configured to display advertising information associated with search phrase together with search results.

[0080]   FIG. 18 is a block diagram illustrating a schematic configuration of the second embodiment of the technical information retrieval system according to the present invention.   In FIG. 18, the same reference numerals are attached to the constituent parts common to FIG. 1, and only different parts will be focused in the following explanation.

[0081]   The technical information retrieval system shown in FIG. 18 includes an advertiser terminal device 7 to provide advertising information concerning products (merchandise) or services.   This advertiser terminal device 7 is a PC or the like, and carries out data transmission and reception with a retrieval apparatus 2 via a communication network such as the Internet.

[0082]   Further, the retrieval apparatus 2 of FIG. 18 has an advertising information database device (advertising information DB) 9 to register advertising information provided from the advertiser terminal device 7.   This database device 9 may be stored in the same recording device of the aforementioned technical information database device 4 or relevant information database device 5, or each of these database devices may have its own recording device.

[0083]   FIG. 19 is a flowchart showing a schematic configuration of the second embodiment of the technical information retrieval system of FIG. 18.   FIG. 19 depicts procedures for registering new technical information in the technical information

database device 4, for searching, and for registering new advertising information in the advertising information database device 9. Of these procedures, the procedure for registering new technical information in the technical information database device 4 (steps S151 to S156) is the same as that of FIG. 10. Therefore, explanation thereof is omitted.

[0084] When an advertiser enters advertising information concerning products and services via the advertiser terminal device (step S157), the retrieval apparatus 2 carries out morphological analysis on the input information (step S158), adds a significant degree and assigns weights to the advertising information (indexing) (step S159). More specifically, the retrieval apparatus 2 generates word vectors concerning the advertising information and registers them in the advertising information database device 9 (step S160).

[0085] Incidentally, when registering new advertising information, the advertiser transmits to the retrieval apparatus 2 via the communication network a document having necessary items recorded therein in accordance with the format shown in FIG. 15.

[0086] On the other hand, when a user enters a search phrase using a user terminal device 1 (step S161), the retrieval apparatus 2 carries out morphological analysis on the search phrase (steps S162, S163), adds a significant degree and assigns weights to the search terms (step S164).

[0087] Subsequently, the retrieval apparatus 2 performs arithmetic operations for dot products between the word vectors of the search terms and respective word vectors registered in the technical information database device 4, and further between the word vectors of the search terms and respective word vectors registered in the advertising information database device 9, so as to detect similarity (step S165).

[0088] Then, the retrieval apparatus 2 determines similarity based on the results of the arithmetic operations for dot products (step S166). More concretely, the retrieval apparatus 2 determines whether or not the results of the arithmetic operations are lower than a reference similarity. If all the operation results show lower values than the reference similarity, the retrieval apparatus 2 determines that the similarity is low, and gives a notice on a display that there is no relevant technical information (step S167).

[0089] If the operation results show some higher values than the reference similarity, the retrieval apparatus 2 extracts corresponding technical information from the technical information database device 4 and further picks out advertising information relevant to the technical information from the advertising information database device 9 (step S168).

[0090] Subsequently, the retrieval apparatus 2 allows the user to select a display format of the search result (step S169), and then displays the technical information and the advertising information relevant to the technical information which are classified by technical information, related technology, or associated company (steps S170, S171, S172).

[0091] Incidentally, step S162 of FIG. 19 corresponds to related term extracting means, step S163 to first morpheme analyzing means, step S154 to second morpheme analyzing means, step S158 to third morpheme analyzing means, step S156 to first information storing means, step S160 to second information storing means, step S165 to dot-product calculating means, step S166 to similarity determining means, and steps S170 to S172 to search result output means.

[0092] FIG. 20 is a view showing an example of screen display of a search result displayed on the user terminal device 1.   As seen in the figure, there are display regions of advertising information in addition to display regions of a search phrase, an extraction result list of technical information, and detailed description of pieces of the technical information.   The size of display region of the advertising information may be changed arbitrarily in accordance with the number of pieces of advertising information.

[0093] The advertising information may be displayed with change of display size of the advertisement in accordance with the degree of similarity.   In this case, the advertising information that the user is more concerned with can be displayed in a larger area, thus increasing the effect of advertisement to a greater degree.   In addition, since the pieces of advertising information on the products or services the user is interested in are displayed in large areas, the user can readily attain the search purpose through check-up of the advertising information.

[0094] It is desirable that, when the user selects specific advertising information displayed on the screen of FIG. 20 by using a mouse or the like, overviews of the

products or services concerning the advertising information, or homepages of corporations and the like which provide the advertising information be displayed. Thereby, a detailed description of the advertising information is presented merely when the user wants it.

[0095] Meanwhile, a quantitative effect by insertion is expressed by equation (1) shown below.

[0096] $a = (b \times c) / \sum bxd$ ... (1)

where a, b, c and d denote an index of advertising effect, the number of times the relevant advertisement is displayed on the screen, the similarity when the advertisement is displayed, and the number of times the overview of the advertisement is referred to through selection of the banner of the advertisement by using a mouse or the like, respectively.

[0097] The larger the value of a calculated by the equation (1), the greater the advertising effect is.   Thus, by setting the insertion fee based on the value a, it is possible to send a bill appropriate to advertising effect to each advertiser.   The above equation (1) corresponds to insertion fee setting means.

[0098] Similarly, an objective market value of the technical information registered in the technical information database device 4 can quantitatively be measured.   The quantitative effect in this case is expressed by the following equation (2).

[0099] $S = (t \times u) / \sum t \times v$ ... (2)

where S, t, u and v denote an index of market value of extracted technical information, the number of times the relevant technical information is displayed on a list on the screen, the similarity when the technical information is displayed, and the number of times the overview of the technical information is referred to through selection of the listed technical information by using a mouse or the like, respectively.

[0100] This S can be utilized as a standard of value when a license transaction actually takes place.   Conceivably, the larger the value of S, the higher the market value is.   Therefore, it is desirable to invite user's attention to the technical information having S of a large value by highlighting its title information.   The above equation (2) corresponds to market value estimating means.

[0101] The advertiser can make an online insertion order via the Internet or the like.

FIG. 21 is a view showing an example of screen of online insertion order. As shown in the figure, the advertiser enters a catch phrase, a product name, a company name, a contact address, a product overview, and the like, in respective spaces and makes insertion order via the Internet or the like. The retrieval apparatus 2 stores advertising information received from the advertiser in the advertising information database device 9.

[0102] In this way, according to the second embodiment, it is not only that certain technical information relative to the search phrase input by a user is displayed in the order of similarity, but also advertising information relevant to that technical information is displayed. This makes it possible to provide the advertisement only to the user who is concerned with specific products or services, thus enhancing the advertising effect. That is, since advertising information relevant to a search result is provided to the user, it is possible to provide the advertising information only to the user who is concerned with the advertising information. Consequently, it is possible to enjoy larger sales of products or services by advertising compared to the case of advertising to an unspecified number of users.

[0103] Further, since the advertising information is provided to the user at the time when a search result is obtained, the advertising information may not pointlessly be provided to the user without giving him or her trouble.

[0104] In addition, since the online order of adverting information is possible, advertiser convenience can be facilitated and change-over of advertising information can be readily performed.

[0105] In the present embodiment, when initial registration of advertising information is performed, product information index shown in FIG. 21 is displayed on the screen of the advertiser terminal device 7. The product information index of FIG. 21 has columns of catch phrase, product or service name, company name, contact address, and product overview. The information given to the product information index is sent to the retrieval apparatus 2 and registered in the advertising information database device 9.

[0106]

[Advantage of the Invention]

As described in detail above, according to the present invention, a search result

is output by taking into consideration the similarity between the search phrase and technical information to be searched for.   Therefore, it is possible to easily and correctly grasp how much each piece of technical information to be searched for is similar to the search phrase.   This promotes the speed and efficiency of the screening work of an examiner who conducts patent examination based on prior art documents. Further, precision of trend analysis of patents of enterprises (for example, investigation of research and development strategic planning, development status of other companies, and the like) can be enhanced and made more efficient.   Furthermore, technology analysis can be made practicable.

[0107]   Moreover, according to the present invention, advertising information having a high similarity to the search text is automatically provided.   This means that advertisements are provided merely to users who are concerned therewith, with a result of achieving cost-effective insertion through direct marketing.   Since such advertising information that does not attract users is not provided to these users, trouble can be avoided with respect to users on the search service.

[0108]   Since the search service includes advertising information, the use charge of the search service can be set low, with the promotion of utilization of the service.   Further, it is possible to enhance the advertising effect by changing the contents of the adverting information according to the similarity.